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PATENT APPLICATION
RESPONSE UNDER 37 CFR §1.116
EXPEDITED PROCEDURE
TECHNOLOGY CENTER ART UNIT 2815

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of

Toshiyuki NAKAYAMA et al.

Group Art Unit: 2815

Application No.: 09/582,351

Examiner: C. Chu

Filed: August 11, 2000

Docket No.: 106386

For: SEMICONDUCTOR DEVICE AND METHOD OF MANUFACTURE THEREOF,
CIRCUIT BOARD, AND ELECTRONIC INSTRUMENT

REQUEST FOR RECONSIDERATION AFTER FINAL REJECTION

Director of the U.S. Patent and Trademark Office
Washington, D.C. 20231

Sir:

In reply to the March 25, 2003 Office Action, reconsideration of the rejections is respectfully requested in light of the following remarks. Claims 1-10, 12-19 and 21-22 are pending.

A. The Office Action recites claims 1, 3-10, 12, 14-19, 21 and 22 under 35 U.S.C. §103(a) over U.S. Patent No. 5,677,575 to Maeta et al. (Maeta) in view of U.S. Patent No. 5,519,576 to Moore. This rejection is respectfully traversed.

Regarding claims 1 and 12, the Office Action asserts that the middle part of a wiring circuit 1a shown in Fig. 2 of Maeta corresponds to a film recited in claim 1, and that one of ordinary skill in the art would have been motivated to modify the middle part of the wiring circuit 1a of Maeta with a wide paddle 36 of Moore, for the purpose of "increasing heat dissipation." Applicants respectfully disagree for any of the following reasons.

First, the suggested modification would destroy the operation of the Maeta apparatus. Fig. 2 of Maeta is a sectional view showing a construction of principle portions of a construction of a conventional semiconductor package (see col. 6, lines 15-17). From the disclosure of Maeta, it is clear that the conventional semiconductor package shown in Fig. 2 has a wiring circuit pattern similar to that shown in Fig. 4 or Fig. 5. As such, the "middle part" of the wiring circuit 1a shown in Fig. 2 is merely a cross section of a portion of the wiring circuit 1a.

In contrast, the paddle 36 of Moore is, as shown in Fig. 4, a large monolithic sheet of material that provides a platform on which an integrated circuit may be mounted. Replacing the wiring circuit 1a of Maeta, or a portion thereof, with a paddle 36 of Moore would destroy the operation of Maeta, because the monolithic paddle 36 could not perform the same function as the circuit 1a it was replacing (see MPEP §2143.01, the section entitled "THE PROPOSED MODIFICATION CANNOT RENDER THE PRIOR ART UNSATISFACTORY FOR ITS INTENDED PURPOSE"). As such, one of ordinary skill in the art would not have attempted to make the modification suggested by the Office Action.

Second, combining Maeta and Moore as suggested by the Office Action, i.e., to replace element 1a (middle part) with a wider element, would make the Maeta apparatus much larger. Since the goal in the semiconductor arts is typically to make things smaller, one of ordinary skill in the art would not have been motivated to make the modification suggested by the Office Action.

Third, the Office Action asserts that one of ordinary skill in the art would be motivated to make the suggested modification to the Maeta apparatus for "the purpose of increasing heat dissipation." However, it is not the shape (or size) of the Maeta paddle 36 that increases heat dissipation. Rather, as disclosed in col. 2, lines 47-49 of Moore, heat is efficiently conducted as a result of perimeters of the leads being close to and parallel to the

paddle perimeter. Since Moore does not teach or suggest that heat dissipation can be improved by making the paddle 36 wide, the Patent Office has failed to set forth a case of *prima facie* obviousness.

For any of the reasons discussed above, Applicant respectfully submits that the references would not have been obvious to combine in the manner suggested by the Office Action and/or that, even if combined, the combination would not have resulted in the invention recited in claim 1 or in claim 12. Therefore, claims 1 and 12 are patentably distinct from the applied prior art.

Claims 3-10, 14-19, 21 and 22 are allowable at least for their dependence on allowable base claims, as well as for additional features they recite. For example, claims 8 and 17 recite that the film is formed to project outside a region in which a semiconductor chip is adhered. This feature is shown in Fig. 6, for example. The Office Action asserts that Maeta discloses this feature. However, Figs. 2, 4 and 5 of Maeta show that the middle part of the wiring circuit 1a (asserted to correspond to the film) does not project outside the region in which a microchip would be adhered.

Accordingly, Applicant respectfully request withdrawal of this rejection.

B. The Office Action rejects claims 1-10, 12-19, 21 and 22 under 35 U.S.C. §103(a) over U.S. Patent No. 5,804,882 to Tsukagoshi et al. (Tsukagoshi) in view of Moore. This rejection is respectfully traversed.

The Office Action asserts that a spacer 6 shown in Fig. 1 of Tsukagoshi corresponds to a film recited in claims 1 and 12. Further, Office Action states that the ordinary artisan would have been motivated to modify Tsukagoshi in view of Moore for the purpose of increasing heat dissipation.

As with the Maeta apparatus discussed above, combining Tsukagoshi and Moore would make the Tsukogoshi apparatus much bigger. Thus, one of ordinary skill in the art

would not have been motivated to combine Tsukagoshi and Moore as suggested by the Office Action.

In addition, because Moore does not teach or suggest the improvement of heat dissipation by making the paddle 36 wide, the Patent Office has failed to set forth a case of *prima facie* obviousness.

As such, Applicant respectfully asserts that the references would not have obvious to combine, and thus requests withdrawal of this rejection.

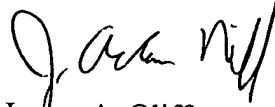
C. The Office Action rejects claims 2 and 13 under 35 U.S.C. §103(a) over Maeta and Moore and further in view of JP-07169795 to Oda. This rejection is respectfully traversed.

As discussed above, Maeta and Moore are not combinable in a manner that would have rendered obvious the claimed invention. Oda does not overcome the deficiencies of Maeta and/or Moore. As such claims 2 and 13 are allowable at least for the dependency of allowable base claims.

In view of the foregoing amendments and remarks, Applicant submits that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-10, 12-19, 21 and 22 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicant's undersigned representative at the telephone number set forth below.

Respectfully submitted,



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Date: June 17, 2003

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